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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/596,556	06/16/2006	Victor Casana Giner	38438.00.0002	7869

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EXAMINER	
YOUNG, MICAH PAUL	
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1618	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)
	10/596,556	CASANA GINER ET AL.
	Examiner	Art Unit
	MICAH-PAUL YOUNG	1618

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *3/22/11*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,5,14,23,40 and 84-110* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,5,14,23,40 and 84-110* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)	
1) ☒ Notice of References Cited (PTO-892)	4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)	5) ☐ Notice of Informal Patent Application
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.	6) ☐ Other: _____.

DETAILED ACTION

Acknowledgment of Papers Received: Amendment/Response dated 3/22/11.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1, 5, 14, 23, 40, 90, 91, 94, 96, 98, 100, 101, 104, 107, 109 and 110 are rejected under 35 U.S.C. 103(a) as being unpatentable over the disclosures of Mathiowitz et al (USPN 5,985,354 hereafter '354) in view of Brach et al (USPN 4,720,460 hereafter '460).

The '354 patent discloses a microencapsulating process comprising multiple polymer solutions and resulting in microcapsules with multiple polymeric coatings (abstract). An emulsion is formed by emulsifying an aqueous phase comprising a biologically active agent (col. 8, lin. 10-18). The aqueous portion is mixed with an emulsifier to form an emulsion (col. 8, lin. 15, col. 9, lin. 30-35, Examples), where the oil phases can be an organic oil (col. 8, lin. 43; col. 9, lin. 30-35). To this polymeric solutions are added to form layers or coating over the

encapsulated core (col. 8, lin. 35-40; col. 11, lin. 25-30). Possible hydrocolloid compounds include gelatin and alginates (col. 4, lin. 45-50). These alginates have an HLB from 10-14. These are not enteric polymers and as such would release in highly acidic conditions less than 3 pH. The aqueous portion can further include polymerization initiators that crosslink the polymers (col. 10, lin. 35-45). The first and second hydrocolloid solutions can be used to polymerize or crosslink each other, for example alginate can be crosslinked with gelatin with the aid of cations metal ions (col. 11, lin. 18-25). The temperature is raided in order to speed the process, in doing so the layered polymers harden strengthening the outer layers (col. 11, lin. 10-17). Despite the thermal hardening the temperature is maintained between 20-60^{0}C (col. 11, lin. 3-10). Surfactants can be added after the formation of the microcapsules (Examples). The resulting microcapsules are washed and dispersed in ethanol (Examples). The water phase comprises no alcohol and as such comprises less than the 40% required in claim 101.

The reference discloses a wide variety of encapsulated active agents including enzymes and biologically active agents. What is lacking is the specific biologically active materials of the claim 40, the elected compound Lactobacillus casei.

The '406 patent discloses a method of stabilizing bacteria compounds (abstract). The stabilization process included microencapsulation where the process comprises stabilizers and carriers such as alginates, xanthan gum and polyethylene glycol (col. 3, lin. 60-col. 4, lin. 5). The bacteria include Lactose base bacteria such as Lactobacillus casei (col. 4, lin. 30-45). It would have been obvious to include these compounds into the '345 patent in order to further stabilize the compounds, specifically from thermo degradation. It would have been prima facia obvious to combine the prior art since both provide the stabilization of biologically active agents.

Including the bacteria of the '460 patent would have been prima facia obvious to improve the stability by the process of the '345 patent.

The reference differs from the instant claims in the order of steps in the process. However the same general conditions and major steps have been accomplished. An emulsion is formed comprising a biologically active substance, an oil phase, and water phase comprising polymerization initiators. To this emulsion further hydrocolloid compounds are added and polymerized. The resultant mixture is heated, surfactants are added, and the resultant microcapsules are suspended in water (examples). It has been held that the selection of any order of performing process steps is prima facie obvious in the absence of new or unexpected results. See also In re Burhans, 154 F.2d 690, 69 USPQ 330 (CCPA 1946). In the instant case the resulting microcapsules are formed with the same steps and as such would be prima facie obvious over the instant claims.

Claims 1, 84-87 and 106 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combined disclosures of Mathiowitz et al (USPN 5,985,354 hereafter '354) in view of Unger et al (USPN 5,773,024 hereafter '024).

As discussed above the '354 patent discloses a process of making microcapsules. The reference discloses the general steps but is silent to the conditions under which the microcapsules are formed.

The 024 patent discloses a method of making microcapsules (abstract). The microcapsules are formed under constant agitation (col. 11, lin. 60-65) with RPMs from 25-4000 (col. 18, lin. 1-5). The formation occurs in the presence of an inert gas such as nitrogen (col. 6,

lin. 58-63) inside of a container that protects the process from light degradation (Figures). The pressure in the container is reduced (Table 2). The emulsion comprises an oil phase where the oil can be soybean oil (col. 13, lin. 25-35). Stabilizers/surface active agents that can be included in the formulation include glycerol esters (col. 14, lin. 21-28). The resulting particles have an average diameter of about 3μm (Table 6). It would have been obvious to process the microcapsules of the '354 container and agitator in order to protect the emulsion from premature photo initiation.

It would have been prima facia obvious to formulate the microcapsules of the '354 patent in the apparatus of the '024 patent in order to protect the components from premature photo-initiation. It would have been obvious to combine the prior art with an expected result of a stable microparticle formulation.

Claims 1, 88, 89, 99, 102, 103, 105, and 108 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combined disclosures of Mathiowitz et al (USPN 5,985,354 hereafter '354) in view of Yan et al (US 2003/0193102 hereafter '102).

As discussed above the '354 patent discloses a method of microencapsulation comprising adding colloidal solutions to an emulsion, where the emulsion comprising an oil and water phase. What is lacking is the specific oils of the oil phase and the components of the aqueous phase.

The '102 publication discloses a method for microencapsulation where the microcapsules have an outer shell made of a colloidal compound (abstract). The outer shell coats microcapsules comprising an oil and aqueous phase, wherein the oil can be an omega-3 fatty acid, flax oil and vitamin E [0021]. The outer colloidal shell comprises alginates or arabic gum [0022]. The

encapsulated aqueous phase comprises ascorbic acid that aids in the encapsulation process [0024, claim 9]. The microcapsules are dried and formed into a powder for use in food and beverages [0039, claims]. The microcapsules have a particle size from 50-100 μm [0026-0027]. It would have been obvious to combine these various components into the process of the '354 patent since both patents comprise similar components. The oil components would improve the nutritional properties of the resulting microcapsules. The hydrocolloids in the shell would provide stability to the microcapsules provide a stronger rupture-resistant structure that achieves high loads of active substances.

It would have been obvious to combine the prior art in order to provide a more stable and rupture resistant microparticle formulation. This formulation would have increase load capacity and use in food and beverage preparations.

Response to Arguments

Applicant's arguments filed 3/22/11 have been fully considered but they are not persuasive. Applicant argues that:

The combination of the '354 and '460 patents does not obviate the instant claims since the combination does not disclose each and every limitation of the instant claims.

Applicant argues that the '354 patent does not meet all of the limitations of the instant claims, specifically the steps of claims 1. It is the position of the Examiner that the '354 patent at least meet the limitations of claim 1 (a-f). The '354 patents discloses a continuous microencapsulation method comprising emulsifying a water phase in an oil phase where the emulsion comprising a polymerization enhancer, emulsifier and a biological agent (col. 8, lin.

10-18). The emulsifier is an alginate with the same HLB as the instantly claimed emulsifier. Next a solution is added to the emulsion of step on where the solution comprises a hydrocolloid (col. 8, lin. 15). To this a coating solution is added where the solution comprises a colloid (col. 8, lin. 35-50). Surfactants are added to the mixture and the size of the microcapsule is reduced (Example). After some time, the formed microcapsules have their outer coatings hardened by heating and cooling (col. 11, lin. 3-10). The structure of the microcapsules is that of smaller core droplets encapsulated by a larger droplet (Examples). The water phases are free of alcohol and thus have less than 40% alcohol.

Applicant argues that the '354 patent is drawn to a solvent evaporation method as well as steps including coacervation. Since these steps are not claimed the '354 patent does not obviate the claims. However the claims are written with open claim language that could further included any steps. The result of the '354 patent is a microcapsule with multiple coatings and a core. The components of the core and coatings are the same as the instant claims and as discussed above the steps to achieve these microcapsules are similar in nature (abstract).

The reference differs from the instant claims in that it is silent to the specific active agents chosen in the species election. The microencapsulation of bacteria in order to stabilize them for pharmaceutical administration is known in the art as seen in the '460 patent. The '460 patent discloses a method of encapsulating bacteria in order to protect them from thermal degradation. It would have been prima facia obvious to improve the stability of the Lactobacillus casei the process of the '345 patent. For these reasons the claims remain obviated.

The combination of the '354 and '024 patents does not obviate the instant claims since the combination does not disclose each and every limitation of the instant claims.

Applicant argue that the 024 patent does not remedy the deficiencies of the '354 patent, since it is drawn to liposomes and not microcapsules. Further the '024 patent encloses gases and not liquid or solids. As discussed above, it remains the position of the Examiner that the '354 patent continues to obviate the instant claims by at least disclosing the method steps of claim 1 (a-f). The '024 patent is applied not to remedy deficiencies in method steps a-f, but to address the processing limitations of claim 84-877, where the process is completed under reduced pressure, at a specific RPM in the presence of an inert gas. The '024 patent is used to establish the level of skill in the art regarding encapsulating methods occurring under reduced pressure, in the presence of inert gases. The '024 patent though not encapsulating the same liquid of solids as the inventor envisions (gases are considered liquids due to their fluid dynamics), the basic steps of emulsification and encapsulation occur in the '024 patent. The process further comprises stabilization of the microcapsules by the addition of surfactants and stabilizers similar to the processing steps of the '354 patent. The patents both address the stabilization of desired pharmaceutical compounds by microencapsulation. It would have been obvious to combine the processing steps in order to emulsion from degradation and photo-initiation. For the reasons the claims remain obviated.

The combination of the '354 and 102 publication does not obviate the instant claims since the combination does not disclose each and every limitation of the instant claims.

Applicant argues that the '102 publication odes not remedy the deficiencies of the '354 patent as discussed above. However as further discussed above the '102 publication is not applied to address the alleged deficiencies of the '354 patent regarding claim 1, since it remains the position of the Examiner that the limitation of claim 1(a-f) have been met by the disclosures of

the '354 patent. The '102 publication is applied to address claims 88, 89, 103, 105 and 108, which describe specific components of the oil phases and size of the oil droplets. As discussed above the '354 patent discloses the formation of microcapsules by emulsifying a solution in an emulsion with an oil phase. The '102 publication discloses a similar process where the oil components are the same as the instant claims. It would have been obvious to combine these various components into the process of the '354 patent since both patents comprise similar components. The oil components would improve the nutritional properties of the resulting microcapsules. The hydrocolloids in the shell would provide stability to the microcapsules provide a stronger rupture-resistant structure that achieves high loads of active substances. For these reason the claims remain obviated.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICAH-PAUL YOUNG whose telephone number is (571)272-0608. The examiner can normally be reached on Monday-Thursday 7:00-5:30; every Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael G. Hartley can be reached on 571-272-0616. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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Supervisory Patent Examiner, Art Unit 1618